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(54) **METHOD AND SYSTEM FOR IMAGE REGISTRATION USING AN INTELLIGENT ARTIFICIAL AGENT**

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(57) **ABSTRACT**

Methods and systems for image registration using an intelligent artificial agent are disclosed. In an intelligent artificial agent based registration method, a current state observation of an artificial agent is determined based on the medical images to be registered and current transformation parameters. Action-values are calculated for a plurality of actions available to the artificial agent based on the current state observation using a machine learning based model, such as a trained deep neural network (DNN). The actions correspond to predetermined adjustments of the transformation parameters. An action having a highest action-value is selected from the plurality of actions and the transformation parameters are adjusted by the predetermined adjustment corresponding to the selected action. The determining, calculating, and selecting steps are repeated for a plurality of iterations, and the medical images are registered using final transformation parameters resulting from the plurality of iterations.

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